

**AMENDMENTS TO THE SPECIFICATION:**

Please add the following at page 1, after the title:

**BACKGROUND**

Please delete the following at page 1, line 9, and insert:

Background to the Invention and Prior Art**Related Art**

Please amend the paragraph at page 2, beginning at line 23:

Traditionally, rate control in the Internet is taken care of by the Transmission Control Protocol (TCP). TCP is described in many references and places, for example, “Fred Halsall, Data communications, computer networks and open systems, 6<sup>th</sup> ed., Addison-Wesley, 1995. TCP is a window based rate control algorithm, i.e. window based rate control is achieved by limiting the amount of data that can be in the network at any one time. TCP is stable and normally makes fairly efficient use of the available bandwidth, and distributes network resources fairly between different users. For file transfer and email, TCP performs well because, provided the file or email arrives within a reasonable time at its destination, it is not important at which rate the data was transmitted. However, TCP rate control gives rise to fluctuations in the transfer rate that are unacceptable for applications where the rate of data transmission is important, for example, real time applications, such as video and audio streaming. The reason for this is that if a single packet is lost the congestion window is halved. Further TCP guarantees that lost packets will be retransmitted until they arrive at the receiver. For some

applications including real-time multimedia applications, this is not necessary. Problems with rate fluctuations which occur in networks running TCP have made it necessary to develop alternative rate control algorithms. It is believed that in time TCP will become a less preferred option, as it becomes less able to deal with the greater variety of services users demand.

Please amend the line 7, at page 5 as follows:

Summary of the Invention

Please amend the paragraph at page 5, beginning at line 9:

According to ~~the present invention~~ an exemplary embodiment, there is provided a method of controlling the rate of data transmission from a source of data to a user via a communications link, wherein processing means are provided to generate a signal representing a rate request which will be used in determining the rate at which data will be transmitted from the source to the user, said processing means generating the signal by carrying out the steps of: obtaining an indication of the amount of congestion on said communications link,

selecting a value indicative of the user's willingness to pay for a given transmission data rate, and

determining the rate to be requested as a function of the indication of the amount of congestion and the user's willingness to pay weighted by a variable parameter, the processing means thereafter communicating the signal to the source of data and the rate

of the data transmission from the data source to the user then being controlled on the basis of the signal.

Please amend the paragraph at page 5, beginning at line 29:

Preferably (but not necessarily), the rate to be requested is determined using the following iterative equation:

Please amend the paragraph at page 7, beginning at line 16:

Preferably (but not necessarily), the method of controlling the rate of data transmission determines the rate to be requested in accordance with the following equation:

Please add the following at page 9, line 9:

#### **DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS**

Please amend the paragraph at page 9, beginning at line 17:

Figure 1 shows an internetwork comprising a content provider's local area network 1 connected to a customer end configuration via an internet service provider's (ISP) network 6. The content provider's local area network 1 includes a video server 4 having a stream adaptation module 24 and a memory 26 where the video data is stored. It is not essential that the memory 26 be located at a particular video server. The memory 26 may be remote from the server 4. The customer end includes a video play 2 (with video output 10) and a dynamic price handling module 8, and a portion of the global Internet 6 (with servers 22) which interconnects the user with the content provider.

Please amend the paragraph at page 13, line 25:

In the embodiment shown in Figure 1, the rate controller 16 determines which streaming data rate is to be requested, and communicates it to the quality of service controller which is embedded in the video play ~~422~~, which sends a request message. The decision to request a data rate adaptation is performed by the quality of service controller, which sends a request to the content provider. However, it is not essential that the quality of service controller handles the communication to the content provider's server. The rate controller 16 may also communicate the request data rate to the content provider.

Please amend line 4, at page 17:

The rate control algorithm used by the rate controller ~~4516~~ is:

Please amend the paragraph at page 17, beginning at line 29:

In order to fully appreciate the ~~invention~~exemplary embodiment, some theoretical background of the rate control algorithm of the present ~~invention~~exemplary embodiment is given in this section.

Please amend the paragraph at page 18, beginning at line 20:

The algorithm of the present ~~invention~~exemplary embodiment overcomes the problems with the primal algorithm. It is able to operate in different phases, like "slow-start", i.e. where the data rate changes rapidly, and congestion avoidance, i.e. where the data rate is kept constant. The algorithm of the present invention is referred to hereinafter as the  $\zeta$  (xi) algorithm and is named after one of its parameters, which determines the "phase", i.e. the mode, in which the algorithm operates.

Please amend the paragraph at page 26, beginning at line 29:

The present ~~invention~~exemplary embodiment allows for the possibility of setting  $\zeta$  to 0 or +1 when relatively rapid changes of data rate request are required, for example to get sufficiently fast convergence, while setting  $\zeta = 1$  at other times to satisfy the needs of several different types of applications, for example, real time data download applications and multimedia applications.

Please amend the title at page 34, before claim 1:

~~CLAIMS~~WHAT IS CLAIMED IS: